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ABSTRACT

Identifying personality types and learning style preferences of students and professionals in the allied health professions can aid college students in academic achievement and in career decision making. A literature review regarding personality types and learning style preferences of students enrolled in various allied health fields is presented. Research using the Myers-Briggs Type Indicator (MBTI) to determine personality characteristics has been performed in allied health professions. The MBTI identifies four bipolar personal preferences: extraversion-intraversion; sensing-intuition; thinking-feeling; and judging-perceiving. This provides a system for classifying individuals according to one of sixteen personality types. Examples are offered of personality profiles of students and their relationship to choice of field in the health professions. In assessing learning styles, an inventory is demonstrated that includes six dimensions of learning preferences: abstract; concrete; individual; interpersonal; student-structured; and teacher-structured. Differences and similarities in learning styles among these students are pointed out. Suggestions are made for using these measurements for matching students' preferences and personalities to assure greater academic and career success. (JD)

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PERSONALITY CHARACTERISTICS AND LEARNING STYLE PREFERENCES OF ALLIED HEALTH STUDENTS

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ABSTRACT

Interest in noncognitive variables and their impact on the teaching-learning process has gained emphasis in recent years in allied health education. In light of the current problems being experienced by the health care system, particularly in allied health, it is critical that additional insight regarding characteristics of allied health professionals be obtained. In doing so, educators can more successfully counsel students regarding choice of profession, curricular difficulties, and selection of job positions. An extensive literature review is presented regarding personality types and learning style preferences of students enrolled in various allied health fields. Implications of these findings upon teaching and learning are noted, and recommendations for future research are identified.

Personality Characteristics and Learning Style Preferences
of Allied Health Students

The hypothesis that noncognitive variables (those unrelated to ability and aptitude) influence academic achievement has been well documented in the literature and is generally accepted by educators. Indeed, such factors as personality and learning style preferences have been addressed in both educational and psychological literature and are not new to the educational environment. However, little formal research has been performed regarding these noncognitive factors. Rather, innumerable research efforts have focused on the relationship between cognitive indices and academic achievement. Indices commonly utilized include SAT scores, IQ, cumulative GPA, subcumulative GPA, and letter grades on specific courses. Furthermore, research findings have centered more often around the relationship between treatments and groups of students as opposed to individual students.

Over the past decade, allied health faculty have become more concerned with the impact of noncognitive factors on learning. They are realizing the importance of investigating the influence of such noncognitive factors as personality type and individual learning styles on academic achievement and career success. Morgan (1976) emphasizes the importance of noncognitive factors when applied to learning when she states that, "The challenges to education are great.... And the challenges particularly include a need for experimentation in teaching approaches that could reach individuals whose full potential for learning has scarcely been tapped (p.84)." Llorens and Adams (1976) point out that although educators understand the concept of learning style differences, they have not actually applied these variables in determining appropriate teaching methods. This lack of effort may be due to the paucity of research which might

reinforce the value of this type of adaptation, as Llorens and Adams (1976) state: "Literature of the allied health professions provides little information on teaching style and learning preferences. Studies showing evidence of the value or lack of value of these concepts are virtually nonexistent (p.87)."

In light of drastic expansion of the health care system, general lengthening of medically-related programs, decreases in allied health funding and the public's increased interest in the economics and quality of current medical care, allied health educators are being forced to deal with accountability questions. Maynard, Larimore, and Seaton (1974) note that increased attrition and high instructional costs have mandated that arbitrary use of student characteristics (cognitive and noncognitive) be refined. In doing so, they predict that selection of potentially successful candidates will be more effective. Dunn, Dunn, and Price (1977) believe that how a student learns may be the most important factor in his academic achievement. They, like Maynard et al., feel that, given current scrutiny by the public, legislators, and courts, it is imperative for educators to utilize diagnostic instruments which may lend insight into individual learning differences. They add that, if for no other use, this step will offer some protection against suits for failure to determine how individuals may achieve.

Oliver (1978) points out that with problems such as expansion of the health care system and work roles contained with it, attrition from professional practice, and job dissatisfaction, it is critical that information be obtained concerning the characteristics of allied health professionals. The utility of this data would be shown through application "...in career planning and job counseling for individuals in health fields, as well as in helping to advise students who are preparing to enter a health-related specialty (p.855)." Thus, the request for research in this area has been heard from both educators and employers of allied health students/graduates in hope that problems unique to each group can be identified, understood, and solved.

Survey of the Literature

General Student Characteristics. Many variables affect the degree of success encountered by students in completing any educational program and in remaining in that career. After conducting an extensive longitudinal study of over one million college students categorized into health aspirants and non-health aspirants, Holmstrom (1975) concluded that such factors as demographic attributes, socioeconomic background, academic ability, self-image, and values influence such outcomes as one's probable major, actual major, career choice, and choice of specialty within a career. Dietrich and Doran (1979) analyzed demographic-biographic, cognitive, psychomotor, and affective variables of MLT (medical laboratory technologist) students contrasted with their articulation interests. Although several demographic-biographic differences of the articulation categories were cited (non-medical technologist continuation students possessed the highest aspirations whereas the terminal associate students had the lowest aspirations), overall the study proved inconclusive in clearly distinguishing the students on the basis of the variables employed. Oliver (1978) investigated the relationship between medical technologists' (MT) interpersonal values and job satisfaction/dissatisfaction and the interaction between technologists' values and different professional levels. He concluded that MTs satisfied with their rewards, helping relationships, and job recognition valued conformity; MTs satisfied with the helping relationships and job recognition valued benovolence; MTs dissatisfied with the helping relationship valued independence; MTs dissatisfied with job recognition valued recognition. Bench level technologists valued support and benevolence; whereas supervisory level technologists valued leadership. In yet another study related to medical technology, Karni and Husted (1970) documented attitudes of sophomore and senior students concerning education in their field, individual contact with laboratory work and

concepts of medical technology as a profession. Both groups responded positively toward their education as a whole though they differed in their reasons for dissatisfaction with certain portions of it, due mainly to curricular requirements and structure (emphasis on chemistry, where the labs were placed in the curriculum, unhappy experiences in clinical practicum, etc.). It is also interesting to note that both groups understood their importance in the medical effort, but that neither medical staff nor laymen recognized their importance as a technologist, thus implying that medical technology suffered from a lack of identity. Overall, the results of these studies indicate that in evaluating characteristics of allied health students, many variables may affect success in the program as well as in the career.

Personality Characteristics. With the multiplicity of allied health professions available to students today, it would be interesting to note what personality types are attracted to the health professions and to a given specialty. Moreover, for a particular specialty it would be advantageous to determine if one personality type predominates the group. Given such information educators could more easily counsel students regarding choice of a profession, curricular problems and selection of positions within a profession to which they would be most suited, based on personality characteristics. Extensive research utilizing the Myers-Briggs Type Indicator (MBTI) to determine personality characteristics has been performed in allied health professions. The MBTI is based on Jung's (1923) theory of psychological types which assumes that much of the supposedly random variation in humans is actually orderly and consistent, due to basic differences in the way people use judgement and perception. McCaulley (1974) states, "Myers found, and we have repeated her findings... that these differences in perception and judgement result in different academic attitudes and aptitudes, different career choices, and different ways of communicating (p.77)."

Specifically, the instrument identifies four bipolar preferences: extraversion (E) - intraversion (I); sensing (S) - intuition (N); thinking (T) - feeling (F); and judging (J) - perceiving (P). Thus, an individual can be classified according to one of sixteen types: ISTJ, ISTP, ESTP, ESTJ, ISFJ, ISFP, ESFP, ESFJ, INFJ, INFP, ENFP, ENFJ, INTJ, INTP, ENTP, and ENTJ.

Although all sixteen types are found in practically all allied health fields, the patterns of attraction differ. Myers and Davis (1964) confirmed this statement, but also found that various specialties appeal more to some personality types than to others. -NFP physicians tend to be attracted to psychiatry; pathologists are most frequently INT- types; anesthesiology attracts IS-J types. McCaulley (1974) found that feeling types in particular are attracted to all health professions. Many sensing types are attracted to health professions and the -S-J types have a special interest in health, particularly among medical technology, pharmacy, dentistry, and physician's assistant students. It was also noted that the -S-- type appears to have a special interest in patient care. Those fields emphasizing technical skills and equipment, such as medical technology, pharmacy, and dentistry are attracted to the -ST- types. Fields requiring emphasis on verbal communication, innovation, relating many complex fields to each other (medicine, nursing and occupational therapy) are particularly attracted to -NF- types. Swihart (1974) reported on the most prevalent types in several divisions, some of which follow: hospital administration, INTJ; medical records, ESFJ; medical technology, ESFJ; occupational therapy, ENFP; physical therapy, ESFJ; radiologic technology, ESFJ; and respiratory therapy, ESFJ.

McCaulley (1974) further noted that types differ in their scores on verbal measures of academic aptitude and achievement: "The sensing types, who appear to be especially attracted to many health careers, typically score lower on aptitude measures, particularly if these are timed. However, these types, particularly the sensing types with judging, who are especially adapted to careers

requiring devoted attention to detail, often overachieve, and do well in training (p.112)." Additionally, she points out that the -S-- types are sometimes not well evaluated by paper and pencil tests and may score lower on registry examinations.

Morgan (1974) reported that Myers (1967) administered the MBTI to a large sample of diploma nursing students. The results showed that the lowest dropout rate occurred among the types most interested in nursing (--FJ). The dropout rate for -STJ types was significantly lower than for the -NFJ types. According to Morgan, these findings were opposite of what would be predicted from aptitude scores, because according to Myers (1967), S types average 7 points lower than N types on IQ, and 50 points lower on the SAT. The worst dropout rate occurred among the -S-P types who have neither the intuitive's advantage in aptitude nor the judging type's advantage in application.

Rezler and French (1974) analyzed personality types of students in six allied health professions. They found that 43% of medical technology students were either ISTJ or ISFJ, and that these types were not found in four of the five remaining groups. Forty-five percent of occupational therapy students were either of the ENFP or ESFP type. Viewing the group as a whole, it was noted that students favored feeling over thinking, and judging over perceiving. Extroverts tended to choose occupations offering opportunities for interaction with others. There was roughly equal distribution of the sensing - intuition scale. Rezler and French (1976) analyzed personality characteristics and job satisfaction patterns of a volunteer group of medical technologists. Approximately 20% of the group was of the ISTJ type. They also discriminated among job roles finding that clinical practitioners tended to be ISFP or ESTJ; whereas educators and administrators tended to be ENTJ. Other results of this study showed that personality types did not interact with job satisfaction in this profession. Comparing data between students and clinicians, there appear to be more -NFP types among the

students. According to these authors this brings about speculation that the more flexible, idea-oriented students leave medical technology either before entering practice or shortly thereafter due to disappointments in working conditions and colleagues.

Williams (1974) analyzed the relationship between personality characteristics and job satisfaction among medical technologists. Due to the small sample and nonrandom grouping among other limitations, the results were not interpreted as significant. However, it is interesting to note that the predominant personality type was ISFJ which reinforces the findings of Rezler and French(1974) previously cited.

Lehman (1965) studied the personality traits of entering female freshmen, among them those planning to enter medical technology and veterinary medicine. He labeled them as dogmatic, traditional-value oriented, authoritarian, non-receptive to new ideas, and inflexible. With the exception of the inflexibility also discussed by Rezler and French (1974), these findings are in contradiction with other research outcomes. It is important to n o t e , however, that differences in instruments used to measure personality characteristics could have attributed to the variation in findings, since Lehman did not employ the MBTI.

Graduate students at the Medical College of Georgia (1980) identified particular instructional strategies for all eight personality dimensions of the MBTI that would be most preferable to each type, based on Myers' descriptions of them. The suggestions were formulated without regard to influences by the other seven categories; thus, realistically, the composite type must be analyzed to recognize true preferences. As was pointed out in earlier studies, a person who is a -SFP may have difficulty academically regardless of the learning strategy used. This illustrates that by knowing the personality type of the

student, one can adjust instructional methodology to aid in attainment of competencies.

In summary, it can be seen that personality characteristics can be related to career choice in the health occupations and to academic aptitude and achievement. However, with each research study performed, requests for further investigation, particularly using the MBTI, are documented. As more is learned about how these factors interact, teachers and students will be better able to understand present behavior. This will then allow reinforcement or modification in behavior, and will also enable both students and faculty to develop self-direction through self-understanding.

Learning Style Preferences. In the past, educators in the allied health professions were mainly concerned with the development of educational programs and curriculum design in demonstrating professional qualifications. However, recent interest has focused on the teaching/learning process. Learning is defined by Lefrancois (1975) as a change in behavior resulting from experience. Learning style preference is not defined as simply due to researchers' beliefs as to its nature and origin. Although some authors state that it is cognitively-oriented, the majority have found it to be based on such things as past experience, heredity, and environment. Thus, it seems that learning style preference is most appropriately defined by Newman (1980) as an individual's affective preference for a particular instructional methodology or environment.

In allied health fields where students are expected to acquire knowledge and achieve the competency levels of the professions, it is critical that students should be exposed to optimal learning experiences so that they might reach those goals. Particularly with students' increased demands for relevance in learning experiences, faculty are investigating more nontraditional ways of teaching and learning. In order to plan effectively, educators must possess knowledge of

individual students so that, when possible, instruction can be individualized, thereby increasing relevance of learning and aiding in attainment of competencies. As Dunn, Dunn, and Price(1977) point out, although some students may indeed possess psychological and emotional problems that impair learning, such problems may be the result of having been required to accommodate noncomplementary instructional strategies and environments rather than the cause of their inability to learn as easily as their peers.

Teacher ratings of their students were compared to the students' own ratings of a Learning Style Inventory in research conducted by Dunn, Dunn, and Price (1977). The findings showed that teachers could readily identify some preferences of the students but disagreed with other students' preferences, particularly self-motivation and persistence. The authors conjectured that students may try but become unmotivated and less persistent (than what teachers expect) because of their inability to continuously exert an effort due to the use of a style that is inconsonant with their own preferences.

Plovnick (1975) administered a learning style inventory created by Kolb (1977) to medical students in an attempt to correlate learning style preference with career choice. In this instrument, four specific learner types were identified: converger, diverger, assimilator, and accomodator. The results indicated that those students who preferred to be family practitioners and general practitioners were accomodators and divergers. Utilizing the same inventory, a subsequent study was performed by Wunderlich and Gjerde (1978). The results showed no association between learning style and career choice in medical students. Moreover, these authors suggested that a new tool be developed to assess learner preferences because of the low construct validity of Kolb's instrument.

Rezler and French (1975) were among the first to assess learning style preferences of allied health students. Because they could not identify a

suitable test for assessing learning style preferences, they constructed their own inventory which included six dimensions: abstract, concrete, individual, interpersonal, student-structured, and teacher-structured. The majority of students in the six allied health professions tested preferred concrete tasks assigned by the teacher. It is interesting to note that the authors thought the high teacher-structure score may indicate that learning is as much a habit as it is preference, since individuals are more accustomed to this pedagogical orientation before entrance into professional curricula. This is in keeping with the thinking of Smith and Haverkamp (1977) that to some degree learning preferences may be attributed to a lack of exposure to a variety of instructional methods.

Canfield and Lafferty (1974) developed an instrument for measuring learning style preferences concerning four elements: conditions of learning, content, mode, and expectations of performance. They tested the instrument on students majoring in criminal justice, preeducation, nursing, physical therapy, and Girl Scout Administration. Criminal justice and preeducation students had very similar profiles, both preferring competition, authority, and a people orientation to learning. Both physical therapy and nursing students expressed stronger needs for organization and direct experience than all other groups. Payton, Hueter, and McDonald (1979) reported that Canfield and Lafferty also noted differences between male and female students on Inventory results. Women were found to have higher preferences for organization, qualitative content, and people-directed content; men preferred numeric and inanimate content. Payton et al. (1979) also noted that Hueter (1976) attempted to show that differential learning does occur in response to learning styles. Hueter was not able to substantiate this hypothesis but did find that anxiety levels were higher in the group receiving instruction through their least preferred condition and modes, and attitudes toward the learning situation were more negative in this same group.

Payton et al. (1979) utilized the Canfield Learning Style Inventory (CLSI) in describing the learning style preferences of students enrolled in their first year of physical therapy programs in the United States. They described the typical physical therapy student in the following way: neutral in preference for working with peers, setting his own objectives, and working with inanimate objects; he prefers to work closely and personally with the instructor and to engage in coursework that is logically and clearly organized and includes specific details given for assignments and requirements. He is not inclined to independent action, working alone or competing with others. In terms of areas of interest, this student prefers working with people, with little interest in working with numbers and words. He prefers to learn by listening and by direct experience. The differences between men and women on this study were very slight.

Newman (1980) investigated the learning style preferences among different classes of physical therapy students at the Medical College of Georgia. She found that there were essentially no differences in learning style preferences among three classes of students. However, as a group, these students differed strikingly from those reported by Payton et al. (1979). MCG students possessed higher preferences for competing, working with the instructor, independent action, working with words and people, and participating in direct experiences. Low preferences were found for logical organization of course work and knowing specific details. This contrasts with the "typical" student's high preferences for logical organization and knowing specific details, and low preferences for independent action, competing, and working with words.

Llorens and Adams (1978) explored the learning style preferences of occupational therapy students over a three year period utilizing the CLSI. The findings indicated that these students prefer conditions of learning that permit informal teaching methods in which the student has a personal relationship with

the instructor and that allow individual setting of one's own objectives and opportunities to work alone or independently. These students showed a high preference for working with people and learning through direct experience.

In summary, these results indicate that although there may be association between students' learning style preferences and career choice, there are also variances in styles among students in a given profession. Certainly, these findings point to the need for further investigation, particularly longitudinal studies which would more accurately assess students' learning style preferences, and any changes that might occur in them. Of greater importance is the use of these data by individuals, both students and instructors. Instructors would be able to use the information in seeking alternative instructional methods that would maximize interest, motivation, and achievement of students. The student's awareness of his own preferences would allow him to participate in those activities most optimal to his style of learning, as well as identifying those assignments on which he may need to work harder. Together, the student and instructor could determine difficulties in study habits and identify reasonable alternatives.

Conclusion

The importance of identifying personality types and learning style preferences in the allied health professions to aid students in academic achievement and career decision-making is noted. Once educators know the personality differences of students, they can begin to understand differences in learning styles and achievement. It seems reasonable to hypothesize that students who demonstrate affinities for working with people and who possess feeling qualities are well suited for allied health professions, although they may experience difficulty in academic achievement. Thus, it appears that personality types differ in academic aptitude and achievement. Additionally, it can be concluded that career success (job satisfaction) is influenced by the interaction between

the work role and personality of the worker.

One may also hypothesize, as do Rezler and French (1975), that students will be more highly motivated and will achieve at higher levels if they are given the opportunity to learn according to their personalities and learning style preferences. Although some student groups have been found to be homogeneous with respect to learning styles preferences, it is unsafe to postulate that definitive associations can be made between career choice and learning style. Further research would be necessary to substantiate this interaction. It is recommended that future research focus on the following:

1) identification of personality types and learning style preferences of students selected in a given health occupation.

2) identification of personality types and learning style preferences of those who complete professional training and those who do not.

3) identification of teaching methods which are most effective with the various personality types and learning style preferences of students.

4) identification of success/effectiveness in utilizing knowledge concerning personality types and learning style preferences in career counseling.

5) identification of job satisfaction/dissatisfaction, attrition/non-attrition, and work roles of the various personality types.

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